

Report to UNFCCC on Belize's progress regarding implementing the Global Climate Observing Systems (GCOS) Plan

January, 2009

Prepared by National Meteorological and Hydrological Service on behalf of Belize's National
Observing network

1/26/2009

Information on Belize's National Activities in the Implementation of Global Climate Observing System (GCOS)

Introduction

Belize is pleased to take this opportunity to report on its activities relating to its systematic observations program and its progress in implementing the GCOS Implementation Plan. This report was produced in response to SBSTA's invitation to the Parties to submit to the secretariat, by 31st January 2009, information on national activities in implementing the GCOS action plan. The revised UNFCCC reporting guidelines on global climate observing systems were very helpful in the preparation of this report.

The National Meteorological and Hydrological Service (NMHS) of Belize is the leading governmental authority in providing the nation with climate-based products derived from systematic and accurate monitoring and data collection and data analysis. The Service collaborates and provides technical support and training to our systematic climate observing network partners across the country.

The NMHS is the focal point for GCOS related activities and is committed to meeting its observational requirements to address national, regional and global climate change issues. It recognizes the importance of adequate high quality, systematic and comprehensive observations to effectively assess climate change and its potential impacts, to develop effective mitigation and adaptation strategies, as well as to assess risk and vulnerability. The NMHS is also aware that to achieve the level of observations required, considerable effort is necessary from all stakeholders; however, not much progress has been made in implementing GCOS related activities. The greatest obstacle is budgetary constraints and other more urgent national priorities that lower the priority of systematic observation programs. This has significantly reduced the maintenance and monitoring of systematic observing systems of our network stations. Improvements in the national observing networks have been extremely slow.

Chapter 1 Common Issues

Planning

The National Meteorological and Hydrological Service (NHMS) in Belize coordinates all climate related measurements nationwide. As the GCOS focal point, the National Meteorological and Hydrological Service will establish a Task Group with responsibility to coordinate and enhance capacity for climate observations in keeping with GCOS requirements. Its task will be to produce a plan on national climate observation needs and actions to be taken in the atmospheric, oceanic and terrestrial domain. Top priority will be to undertake a survey visit of all the systematic observation systems in order to identify the extent of assistance needed to rehabilitate degraded stations. The Rehabilitation Project is expected to begin in March when each station will be rebuilt. Second priority is to expand the network and train personnel to do the observations. This plan includes replacing unreliable stations with automatic observing platforms. Any expansion may not include all stations that are closed, but new partners may need to be identified.

Quality Control, International Data Exchange and Data Analysis

- a) Quality control is undertaken in keeping with World Meteorological Organization standards where manual observations and coding practices are monitored and data quality checked, including homogeneity.

However, errors caused by inaccurate transcription, evaporation loss, loss during measuring and general exposure can go undetected especially for older records. For older records, systematic errors may also arise due to changes in the measurement techniques before the World Meteorological Organization standard of observations was implemented.

- b) There are no policy barriers with respect to international exchange of essential climate variables. Climate data are transmitted on a monthly basis to the International Data Centers.

Chapter 2: Atmospheric Essential Climate Variables

Currently, none of Belize's weather stations are part of the GCOS (GSN) network. However, its activities are relevant to GCOS. The NMHS operates a network of 1 synoptic station, (21) climate stations, and (26) rainfall stations including the Synoptic and Climate stations.

The Philip SW Goldson International Airport (PSWGIA) is the only synoptic station and is operated by the National Meteorological and Hydrological Service. Hourly observations are conducted during the day and every three hours in the night. Datasets for hourly observations

include temperature, humidity, wind speed and direction, atmospheric pressure, cloud types, amounts, and occurrence of rain/showers, thunderstorms and fog.

Observations for Dry, Wet, Maximum and Minimum Temperatures as well as rainfall from the other network stations are made at 09:00LST (1500 UTC). Eight of these report sunshine. Ten report 1ft and 4ft soil temperatures. There are (11) evaporation pans in the network.

The rainfall values reported for the daily observations represent data collected during the previous 24 hours, ending 09:00LST (1500 UTC). Readings are taken by private sectors such as industries, non-governmental organizations (NGOs), intergovernmental organizations, and government personnel.

Hourly and daily data are entered in the CLICOM data base on a regular basis. Quality assurance of all data is consistent with WMO guidelines. The CLICOM data base is a computer database programme that provides standardized quality control procedures, storage and manipulation of a large number of elements.

The PSWGIA station has about 45 years of uninterrupted time series of meteorological data. The time period from the other stations vary in length from a few years to a few decades.

The PSWGIA station provides a monthly climatological summary message (CLIMAT) to the international data centres on a regular basis.

The challenge the NMHS is currently facing due to budgetary constraints is the infrequent inspection of network stations to ensure that exposure of instruments and the integrity of observations are kept within WMO standards. As a result, significant data gaps continue to exist at most of the stations.

Climate data from suitable stations were used to construct climate projections for temperature and rainfall. This information was used to conduct vulnerability assessments in Tourism, Agriculture, Coastal Zone, Fisheries, Health and Water Resources sectors and to design adaptation strategies.

Contributing networks specified in the GCOS implementation plan	ECVs^a	Number of stations or platforms currently operating	Number of stations or platforms operating in accordance with the GCMPs	Number of stations or platforms expected to be operating in 2010	Number of stations or platforms providing data to the international data centres	Number of stations or platforms with complete historical record available in international data centres

GCOS Surface Network (GSN)	Air temperature	0	0	1	1	1
	Precipitation	0	0	1	1	1
Full World Weather Watch/Global Observing System (WWW/GOS) surface network	Air temperature, air pressure, wind speed and direction, water vapour	0	0	1	1	1
	Precipitation	0	0	1	1	1
Baseline Surface Radiation Network (BSRN)	Surface radiation					
Solar radiation and radiation balance data	Surface radiation					
Ocean drifting buoys	Air temperature, air pressure					
Moored buoys	Air temperature, air pressure					
Voluntary Observing Ship Climate Project (VOSclim)	Air temperature, air pressure, wind speed and direction, water vapour					

Contributing networks specified in the GCOS implementation plan	ECVs ^a	Number of stations or platforms currently operating	Number of stations or platforms operating in accordance with the GCMPs	Number of stations or platforms expected to be operating in 2010	Number of stations or platforms providing data to the international data centres	Number of stations or platforms with complete historical record available in international data centres
GCOS Surface Network (GSN)	Air temperature	0	0	1	1	1
	Precipitation	0	0	1	1	1
Ocean Reference Mooring Network and sites on small isolated islands	Air temperature, wind speed and direction, air pressure					
	Precipitation					

^a Parties should note that the list of ECVs given for each network is indicative of the expected observations from that network. A single response/data entry is expected for each network except for those networks for which precipitation is reported, where a separate response/data entry is requested owing to its particular importance with regard to the Convention.

Belize has one radiosonde station located at the PSWGIA which is a part of the GCOS Upper Air Network (GUAN). Upper air observations are performed once a day outside of the hurricane season and twice a day during the hurricane season from mid-July to mid-October. The data are analyzed by trained operators and then stored and sent to the National Climate Data Centre (NCDC) in Asheville, USA. Effective data quality control is a multi-tiered process involving the upper air observer, National Centres for Environmental Prediction (NCEP), NCDC and the administrative officer. Measurements are in compliance with WMO coding requirements. Metadata records are submitted to the appropriate international data centre.

Table 1b. National contributions to the upper-air atmospheric essential climate variables

Contributing networks specified in the GCOS implementation plan	ECVs	Number of stations or platforms currently operating	Number of stations or platforms operating in accordance with the GCMPs	Number of stations or platforms expected to be operating in 2010	Number of stations or platforms providing data to the international data centres	Number of stations or platforms with complete historical record available in international data centres
GCOS Upper Air Network (GUAN)	Upper-air-temperature, upper-air wind speed and direction, upper-air water vapour	1	1	1	1	1
Full WWW/GOS Upper Air Network	Upper-air-temperature, upper-air wind speed and direction, upper-air water vapour	1	1	1	1	1

Chapter 3: Oceanic Essential Climate Variables

There were three (3) tide gauges and marine meteorological stations in Belize. One station was destroyed by Hurricane Mitch in 1998. The other two deteriorated due to lack of maintenance and are now non-functional. As a result, there is no continuous sea level and sea surface temperature data. One tide gauge will be installed by the end of February 2009.

Chapter 4: Terrestrial Essential Climate Variables

The Hydrology Unit within the National Meteorological Service of Belize currently manages and maintains 27 hydrological observation sites in all but two of the country's 18 major watersheds. The Unit is responsible for collecting and analyzing data on the quantity, quality, and variability of Belize's water resources. There are two watersheds in the extreme south with no stage gauge monitoring sites. The plan for the near future is to expand the hydrological monitoring network into these remote watersheds in southern Belize.

Table 1c. National contributions to the terrestrial domain essential climate variables

Contributing networks specified in the GCOS implementation plan	ECVs	Number of stations or platforms currently operating	Number of stations or platforms operating in accordance with the GCMPs	Number of stations or platforms expected to be operating in 2010	Number of stations or platforms providing data to the international data centres	Number of stations or platforms with complete historical record available in international data centres
GCOS baseline river discharge network (GTN-R)	River discharge					
GCOS Baseline Lake Level/ Area/Temperature Network (GTN-L)	Lake level/area/ temperature	0	0		0	0

Chapter 5 Additional Information

None